Small–scale Forest Economics, Management and Policy, 4(3): 325-342, 2005

What is New about New Forest Owners? A Typology of Private Forest Ownership in Austria

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With structural changes in agriculture, new types of forest owners have become increasingly important. This article develops an empirically-based typology of forest owners in Austria. Based on a representative survey and by means of cluster analysis, seven types of forest owners are identified. These types form a sequence, ranging from forest owners with a strong agricultural background to forest owners with no agricultural background at all. The latter exhibit markedly different behaviour in various respects, e.g. in their interest in forest-related information. The increasing number of 'new' forest owners raises important questions for forest policy, especially how policy instruments can reach these owners and how extension services can address them.

Keywords: forest owner attitudes, structural change, cluster analysis, sources of information

INTRODUCTION

In many European countries, a substantial proportion of private forestland was previously owned by farmers. The agricultural sector, however, has been undergoing structural change in recent decades; many farms have been closed and the share of farms operated on a full-time basis has decreased in favour of part-time farmers. It is to be expected that the structural development of the agricultural sector has far-reaching consequences for forestry and forest policy. When a family gives up its farm, unless the land is sold or leased to another farmer, forestlands are no longer part of an agricultural enterprise. Rather, a 'new' type of forest ownership is established, in which the forest is no longer directly connected to agriculture. It is likely that 'new' forest owners hold different values and attitudes towards their forests than farm forest owners, and consequently pursue different objectives and manage their forests differently. The increasing number of 'new' forest owners raises important questions for forest policy, for example about how policy instruments can reach these owners and how extension services can address them.

About 80% of the forest area in Austria is in private hands. According to the most recent official statistics, there are about 171,000 operational entities owning forests (Statistics Austria 2001). While less than 1% of the entities own more than half of

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all forestland, with an average size of about 1,200 ha, about 90% of all proprietors hold less than 200 ha of forestland and almost 40% hold less then 3 ha.

The majority of Austrian forest properties continue to belong to farmers. About 80% of Austrian farms count forests as part of their land. But the number of farm enterprises decreased from about 400,000 in 1960 to about 220,000 in 1999. There is also a clear trend towards part-time farming: in 1960 two-thirds of Austrian farms were operated on a full-time basis and one-third was operated part-time; this ratio is now reversed (Statistics Austria 2001).

Surprisingly, no representative in-depth studies on ownership types and policy implications of possible changes in these ownership types have yet been conducted in Austria. The percentage of the various forest owner types is not even known in approximate figures and there is only fragmentary knowledge of the characteristics which distinguish 'new' and 'traditional' forest owners.

The rationale for the study reported here is that a clear understanding of the structure of forest ownership in terms of the owners' goals, attitudes and behavioural characteristics is needed to design effective and efficient forest policy instruments (Pregernig 2001). A typology of forest owners which differentiates groups with regard to relevant characteristics and which is applicable in the field might help to target forest policy towards specific owner groups more effectively.

The next section of this paper examines the current state of knowledge about 'new' forest owners. The conceptual model adopted in this study as well as the sampling design and the methodology used for group formation are then presented. In the main section, the distinct types of forest owners which have been determined by means of multivariate cluster analysis are portrayed in greater detail. Building on this typology, the question is raised of how forest owners can be reached and addressed. Finally, some possible implications for forest policy and extension services are identified.

STATE OF KNOWLEDGE ABOUT 'NEW' FOREST OWNERS

While there is extensive international literature on private forest owners in general, only a minority of studies deal with structural changes in forest ownership and the emergence of some kind of 'new' forest owners. Even fewer studies aim to develop typologies of forest owners. Most research on private forest owners attempts to shed light on one or a handful of owners' characteristics, such as values, forest-related attitudes or management objectives. Some studies strive to link these characteristics with particular behavioural patterns, for example with regard to the choice of reforestation methods (Karppinen 2005), the effects on roundwood supply (Karppinen 1998a), participation in and compliance with subsidy schemes (Madsen 2003), the motivation for retaining woodlots (Erickson *et al*. 2002), and the readiness to apply management planning (Elwood *et al*. 2003) or to follow principles of ecosystem management (Creighton *et al*. 2002, Jacobson 2002).

Several US and Scandinavian studies also deal with 'new' – mostly understood in the sense of 'non-agricultural' – forest owners (e.g. Kurtz and Lewis 1981, Jones *et al*. 1995, Lönnstedt 1997, Karppinen 1998b). In the German-speaking countries, studies on 'new' forest owners commenced with Plochmann (1976), who described non-farm or non-agricultural forest owners in Germany. More recently, Ziegenspeck

et al. (2004) defined characteristics of 'urban' forest owners, arguing that their use of forests can be better explained by the multi-dimensional construct of 'lifestyle' than by purely socio-economic features such as the income derived from forestry or agricultural production.

In Austria, a number of studies deal with 'new' forest owners in passing. Many of those studies consider purely economic or silvicultural perspectives, e.g. by examining subsidy programs for afforestation (e.g. Voitleithner 1998). A comprehensive literature review is provided by Kvarda (2000). Kvarda (2004) compared attitudes and behavioural intentions of 'traditional' and so-called 'non-agricultural forest owners'. The qualitative research design and the restricted regional scope of her studies do not allow general conclusions to be drawn about the structure and the dynamics of forest ownership in Austria. Nevertheless, Kvarda's thorough descriptive characterisations of forest ownership types have provided valuable input for the study reported here.

Within the research into private forest owners, *typological* studies are rather the exception than the rule. Boon *et al*. (2004) provided a broad overview of typological studies. These authors emphasised that typologies are almost exclusively based on ownership objectives. Studies of this type have been undertaken for example by Kuuluvainen *et al.* (1996), Karpinnen (1998a), Volz and Bieling (1998), Becker *et al*. (2000) and Kline *et al*. (2000). In their own typological work, Boon *et al*. (2004) used survey results relating to 16 ownership objectives to identify four forest ownership types in Denmark. Ruschko (2002) presented a typology of private forest owners in Austria based on owners' attitudes towards their forests.[2] In a German study, Härdter (2004) focused on non-farmer forest owners and provided a typology for this heterogeneous group based on the concepts of social modernisation and urbanisation.

The studies cited above use a number of terms to characterise 'new' forest owners. While the terms 'non-farm' or 'non-agricultural' refer to the hypothesis that the professional occupation of forest owners is the main factor explaining their attitudes and behaviour (Plochmann 1976, Schraml and Volz 2003, Kvarda 2004), the terms 'non-resident' or 'absentee' suggest a reference to the distance of the owners' residences to their forests. Finally, the term 'urban' refers to either the owners' residence in cities or their different (namely urban or modern) lifestyle (Härdter 2003, 2004); on the discussion of terms see also Schraml and Volz (2003).

With regard to the formation of forest owner typologies, Suda *et al*. (2001) rightly criticised approaches that do not allow causal inferences to be drawn, and are thus incapable of anticipating future developments. These authors' meta-analysis reveals that studies in this field are usually based on three groups of factors: (i) structural features of forest ownership, (ii) values, attitudes and objectives, and (iii) the behaviour of forest owners (see also Schraml and Härdter 2002, Volz 2003). Often the identification of typologies is based on a mix of variables from these factor

[2] The study reported here is based on a survey carried out by Ruschko (2002) which has been facilitated and supervised by the authors. Hogl *et al*. (2003) focused on the estimation of the share of 'new' forest owners in Austria while also elaborating the typology discussed here.

groups. The three groups of factors mentioned by Suda *et al*. (2001) have also been investigated in the study reported here.

CONCEPTUAL MODEL OF THE STUDY

Social behaviour is influenced by a great number of tightly interconnected factors. Behavioural models serve to identify the key variables and to describe their interactions in a simplified way. In this study, a simple conceptual model (Figure 1) is employed which serves as a heuristic framework. This conceptual model assigns variables to three levels:

- The *dependent variable* is a specific human act (of decision making); in this case, the dependent variable is represented by the current and intended actions of forest owners.
- Behaviour and behavioural intentions are, *inter alia*, influenced by a person's *attitudes*[3], i.e. it is assumed that forest owners hold varying attitudes towards their forests and forest ownership, and that these variations lead to different behaviour.
- A person's attitudes are influenced by the characteristics of their *social and physical environment*. This group of factors is further divided into (i) characteristics which are typically found in the literature to distinguish between 'traditional' and 'new' forest owners, and (ii) other less frequently recognised characteristics.

Table 1 lists the owner characteristics covered in this study. In contrast to many other typological studies, the formation of ownership types presented below is based solely on one group of factors, namely 'structural attributes'(Table 1, item group 3). For providing a typology which is *applicable* in practical forest policy, owner types are identified only on the basis of characteristics which can be directly observed 'in the field' and for which noticeable differences between owner types can be expected. Furthermore, the formation of the typology presented below draws only on characteristics which are typically used to distinguish between 'traditional' and 'new' forest owners (cf. lower right-hand box in Figure 1). By using only 'structural' variables for the formation of forest owner types, the confusion between structural aspects, attitudes and behavioural variables is avoided. The computation of the typology is based only on structural variables. In a second and independent step, the data on attitudes, objectives and behavioural intentions of forest owners are analysed to characterise forest owner types and to examine differences between these types (Table 1, item groups 1, 2 and 4).

[3] More complex behavioural models not only recognise attitudes but also other determinants of behaviour including values, knowledge structures, loci of control and (perceived) incentives (e.g. see Langenheder 1975, Schur 1990 and Pregernig 1999).

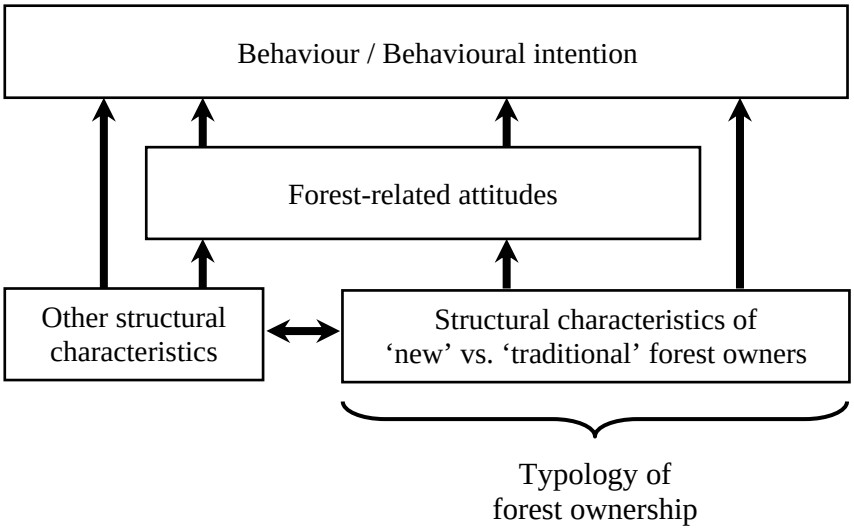

Figure 1. Conceptual model of this study

Table 1. Topics addressed in the survey

Item group 1: Behaviour / behavioural intention
Timber harvesting, timber sales
Time spent in the forest (work, recreation, other)
Membership in forest cooperative
Forestlands leased or on lease
Planned purchase, sale or lease of forestlands
Readiness to offer nature conservation and tourism services
Readiness to join a forest cooperative
Communication behaviour (information on forest-related topics, importance of different sources of information, contacts to and demand for extension services)
Item group 2: Forest-related attitudes
Attitudes towards own forest
Attitudes towards work in own forest
Mental association with forests in general
Opinions towards timber harvesting and forest tendering
Item group 3: Characteristics of 'new' and 'traditional' forest owners
Distance of the owners' residence to their forests
Urban residence (size of municipality in which forest owners lived in childhood and today)
Connectedness with agriculture
Agricultural socialisation (grew up on farm, has farmers among relatives, has agricultural or forestry education, has profession related to agriculture or forestry, forest is part of farm enterprise)
Economic relevance of agriculture (time spent in and income earned from agriculture and/or forestry)
Item group 4: Other characteristics of forest owners and forest ownership
Socio-economic characteristics (size of property, number of workers employed)
Socio-demographic characteristics (job designation, age, school education)

SAMPLING, METHODOLOGY AND IDENTIFICATION OF GROUPS

The target sample size of the survey was 1,000 Austrian forest owners. The sample was drawn from the official real estate register, from which 3,000 out of 2.2 M plots of forestland in Austria were randomly selected. Publicly owned forests (i.e. federal and provincial forests) were excluded from the sample.

The forest owners were contacted via telephone between April and June 2001. Most of the interviews were conducted between 5 and 9 p.m., and typically took between 10 and 15 minutes. If an interview could not be completed successfully the same person was contacted up to four more times in order to avoid under-representation of highly mobile persons. Altogether 1,497 persons had to be contacted for 1,000 successful interviews (a response rate of 67%).[4] Seventy interviewees indicated that they no longer own forestland. The following analyses are based on 930 questionnaires.

Cluster analysis was applied to examine whether there are subgroups of forest owners who share similar characteristics but can be differentiated from other forest owners. The left column in Table 2 indicates the variables used in the analysis.

An initial correlation analysis revealed high interdependence among some of the raw variables which violates an assumption of cluster analysis. Hence *factor analysis* (using the method of principal components analysis) was applied to derive a relatively small number of linear combinations of the original variables that retain as much information on the original variables as possible. A five-factor solution produced easy-to-interpret results. Table 2 presents the factor matrix after orthogonal *Varimax*-rotation. The rotated factor matrix comes close to the ideal of a simple structure, i.e. most of the variables have high loadings for only one factor.

The five composite factors extracted were then used for the hierarchical *cluster analysis* (using SPSS 10). The squared Euclidean distance was chosen as the dissimilarity measure. First, the single-linkage method was used to screen the dataset for statistical outliers. About 1% of the respondents were identified as outliers, and these cases were eliminated from subsequent analyses. Ward's method was then used for final cluster formation (Norušis 2002).

One substantial problem in performing a cluster analysis is determining the 'optimal' number of clusters. Basically, an educated judgement has to be made. Two criteria were applied to assess alternative cluster solutions, namely the relative size of clusters, and the degree to which the individual clusters can easily be characterised in practical terms.

[4] A comparison with the official figures of the national agricultural statistics (Statistics Austria 2001) shows that larger holdings are slightly overrepresented in the sample. This is due to the fact that the likelihood of selecting a specific forest owner from the basic population increases with the number of allotments that a forest owner holds. In-depth analysis and interpretation of the data however indicated that possible statistical distortions are negligible (especially as regards the relative size of various forest ownership types). The categories which are overrepresented are small in absolute numbers and their representatives are relatively uniformly spread across forest ownership types.

Table 2. *Varimax*-rotated component matrix of the 5-factor solution

Original variable	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Working hours in agriculture/forestry	**-0.92**		-0.20		-0.12
Income from agriculture/forestry	**-0.90**		-0.27		
Forest as part of agricultural enterprise	**0.87**			0.16	0.25
Size of municipality where grown up		**0.94**			0.15
Size of municipality today	0.11	**0.88**		0.29	
Professional training in agric./forestry	0.23		**0.90**		0.17
Agriculture/forestry profession	0.59	0.16	0.56		
Distance to own forest	0.16	0.23		**0.94**	0.13
Agricultural socialisation	0.24	0.21	0.15	0.14	**0.91**
Names given to factors	Relation to agricultural enterprise	Size of municipality	Professional training in agric./forestry	Distance to own forest	Agricultural socialisation

Note: High factor loadings are highlighted by bold print; factor loadings below ± 0.10 are omitted.

TYPES OF FOREST OWNERS

Seven types of Austrian forest owners were identified in the cluster analysis. Table 3 reports the means and standard deviations of the responses to the survey for each of the variables used in the cluster analysis. Each forest owner type is given a short name which refers to its main distinguishing characteristics. While such short names can, of course, never accurately describe forest owner types in their full complexity, they still provide useful reference terms.[5] Each of the types is now described.

[5] The ensuing discussion about the groups and their differentiating characteristics is based on statistically-led descriptions. Because of the high level of variation within some of the groups, formal statistical tests for differences between the groups were not applicable in most cases. The selection of characteristics reported was based on two criteria, viz. sufficiently high between-group differences in z-scores (at least > 0.3) and clearly interpretable differences in absolute values (such as hectares of forest land and percentages of income).

Table 3. Descriptive statistics of structural variables for each of the seven clusters

Variable	Mean and standard deviation	Farmer forest owners	Part-time farmers	Small-towners with rural background	Forest owners prev. employed in agric.	Farm leavers	Urban forest owners	Forest owners without connection to agric.	Total
Number of obsns.	N	169	165	97	132	87	71	107	828
Working hours in agriculture/ forestry[1]	Mean	86.5	57.5	31.5	14.4	0.0	4.0	0.7	35.6
	SD	19.7	35.3	37.3	23.9	0.0	12.8	4.2	40.9
Income from agriculture/ forestry[2]	Mean	79.4	37.8	21.6	9.5	0.0	1.6	0.4	28.0
	SD	28.3	40.5	33.4	21.1	0.0	7.3	3.9	39.4
Forest as part of agri. Enterprise[3]	Mean	1.00	1.00	1.45	1.64	2.00	1.83	1.94	1.45
	SD	0.00	0.00	0.50	0.48	0.00	0.38	0.23	0.50
Size of municipality where grown up[4]	Mean	1.77	1.83	3.68	1.89	1.54	2.61	1.91	2.09
	SD	0.50	0.60	0.70	0.65	0.50	1.47	0.71	0.96
Size of municipality today[4]	Mean	1.79	1.80	3.43	2.02	1.61	3.35	2.01	2.16
	SD	0.48	0.52	0.82	0.71	0.54	1.38	0.65	0.95
Professional training in agric./forestry[5]	Mean	1.00	2.00	1.72	1.14	2.00	1.94	1.96	1.62
	SD	0.00	0.00	0.45	0.35	0.00	0.23	0.19	0.49
Agriculture/ forestry profession[6]	Mean	1.64	2.84	3.51	2.83	3.99	3.92	3.84	3.01
	SD	0.92	1.34	0.98	1.19	0.11	0.50	0.57	1.27
Distance to own forest[7]	Mean	1.01	1.02	1.13	1.10	1.00	3.03	1.31	1.25
	SD	0.08	0.13	0.37	0.30	0.00	0.77	0.52	0.65
Agricultural socialisation[8]	Mean	1.01	1.13	1.38	1.09	1.00	1.75	2.46	1.34
	SD	0.11	0.42	0.67	0.29	0.00	0.84	0.50	0.65

Notes:

1. Expressed as a percentage of total working hours on a yearly average basis.
2. Expressed as a percentage of total income of owner and his/her spouse.
3. 1 = yes; 2 = no.
4. 1 = up to 1000; 2 = 1001–5000; 3 = 5001–10.000; 4 = 10.001–100.000; 5 = more than 100.001 inhabitants.
5. 1 = yes, 2 = no.
6. 1 = full-time; 2 = part-time; 3 = indirect; 4 = none.
7. 1 = less than 5 km; 2 = 6-20 km; 3 = 21-100 km; 4 = more than 100 km.
8. 1 = grown up on farm; 2 = have farmers as relatives; 3 = no farm background.

Type 1: Farmer Forest Owners

This group accounts for 20% of the respondents[6] and can be seen as the prototype of 'rural forest owners.' Almost all members of this group grew up on a farm. Two thirds are full-time farmers and the remainder farm on a part-time basis. All have professional training in agriculture or forestry. In general, they grew up and are still living in small municipalities, often very close to their forests. Farmer forest owners spend most of their working time (about 90%) in agriculture and forestry, and as consequence the share of the family income resulting from these sources is high (averaging 80%).

This group is dominated by medium-sized properties; almost half own between 5 and 20 ha of forestland, while about one fifth own between 2 and 5 ha. Almost 90% have inherited their forest. Almost all have harvested timber in the last 10 years. One third have harvested on average between 10 and 30 solid cubic metres (m^3) per year, and another third between 30 and 100 m^3. About two thirds have also sold timber in the last 10 years. While among all respondents less than a fourth are members of a forest cooperative, more than 40% of this group have joined a cooperative.

Members of this type spend more than 60 days per year in their forests – mostly to work there, only occasionally for recreational purposes. Work in the forest is mainly motivated by economic considerations. They see their forest primarily as a source of income and employment. Members of this group have above-average associations with their forests through family tradition, a possibility for hunting and the chance to build up financial reserves. By analogy, these forest owners associate the term 'forest' predominantly with silvicultural or economic concepts; they rarely address emotional feelings or use terms related with recreation or leisure time.

Type 2: Part-time Farmers

This type of forest owners accounts for another 20% of respondents and resembles the above-mentioned group in many aspects. They live in small municipalities close to their forests. About 90% grew up on a farm. Generally, the forest is part of a farm enterprise. But while the first group of farmer forest owners is predominantly made up of full-time farmers, two thirds of the members of this group are part-time farmers, and few have professional training or education in agriculture or forestry. On average, about 58% of their work time is spent in agriculture and forestry, and 38% of their income is derived from these enterprises. These rates are relatively high, but much lower than in the case of farmer forest owners.

The majority of this group own small to medium-size forest properties, and few own more than 50 ha of land. About 90% of forest owners in this group have harvested timber in the last 10 years, and 45% have sold timber.

Regarding their attitudes towards forests and forestry, this group is highly similar to the average of the overall sample. They associate nature conservation, pride of ownership, leisure activities and, remarkably above average, also family tradition with their forests. In contrast to farmer forest owners, the importance of forests for employment and as a source of income is not a top priority. Correspondingly,

[6] It was not possible to estimate the proportion of *forestland area* held by the various forest ownership types, because of the small number of large forest owners represented in the sample and low coverage of very small-scale forest owners in the official statistics.

members of this group associate the term ‘forest’ less with economic concepts than with notions of ‘nature and the environment.’

Type 3: ‘Small-towners’ with Rural Background

A group consisting of about 12% of the respondents can be described as ‘small-townish.’ Almost 80% live in municipalities with 5,000 to 100,000 inhabitants. They often live close to their own forests. They have relatively fewer direct professional connections to forestry or agriculture than types 1 and 2. However, they still have a background with a strong rural socialisation. Almost three quarters grew up on a farm, and those who did not at least have relatives who run an agricultural enterprise. Only one third have professional training in agriculture or forestry. About 13% are full-time farmers, and 40% are part-time farmers. The shares of work time spent in agriculture and forestry (32%) and of income derived from these activities (22%) are relatively high. The share of self-employed persons, civil servants and tradespersons is slightly above average.

In terms of the average size of forest properties, small-towners do not differ greatly from the overall population of forest owners. But more than in other groups, they have acquired their forests through purchase or swap, and have leased their forest areas to someone else. Ninety percent have harvested timber in the last 10 years, and more than half have also sold timber. Concerning their forest-related attitudes and behaviour, they are less ‘rural’ than the groups described before. They associate mainly nature conservation, family tradition and pride of ownership with their forest.

Type 4: Forest Owners Previously Employed in Agriculture

This group accounts for 16% of the respondents and, as with types 1 and 2, members often live in smaller municipalities close to their forests. They have a pronounced rural background; 90% grew up on a farm. Almost as many (85%) have professional training in agriculture or forestry, which is similar to the farmer forest owners group. In contrast to groups 1-3, relatively few are engaged full-time in agriculture and forestry. Many members of this group have left their previous agricultural employment for which they were trained. For this reason, we call this group ‘forest owners previously employed in agriculture.’ Their forests are predominantly less than 2 ha in area. At the same time, it is interesting that the share of larger forest enterprises (with more than 200 ha) is remarkably high, at 13%. In one quarter of the cases the forest is not owned by individuals but by companies and other institutions. About 90% have harvested timber, and about 60% have also sold timber in the last 10 years. While most have harvested only small to medium quantities, one fifth have harvested and sold more than 100 m^3 per year.

Type 5: Farm Leavers

This type − comprising about 10% of respondents − differs in many important respects from the types described above. All members grew up on a farm but not one has professional training in agriculture or forestry. The forest is never part of an agricultural enterprise. Members of this group do not have any professional connections to agriculture or forestry; they are not engaged in agricultural or forestry production and they do not earn any income from this sector. Employees, civil servants and tradespersons each make up almost one quarter of the group, and

retirees account for another 20%. Because of this background, the group is referred to here as 'farm leavers'.

In most cases, farm leavers still live in small to medium-sized municipalities, often close to their own forests. Their forests are rather small: about 60% have forest areas of less than 2 ha. About 80% have harvested timber in the last 10 years, which is only slightly below average, but the share of owners who have also sold timber is remarkably lower with 37%. Farm leavers spend about 40 days per year on average in their own forests, mostly for recreation. If they do work in the forest they see this work as a hobby or a kind of break from their daily routines. They perceive their forests as a possibility for leisure activities and as a symbol of prestige.

Type 6: Urban Forest Owners

A type which represents approximately 9% of forest owners is best described by the term 'urban forest owners.' Members have characteristics which are almost as prototypical as the first type of farmer forest owners, although the distinctive features point, of course, in the opposite direction. Urban forest owners live in larger cities, often far away from their own forests. Some grew up in larger municipalities, while many have moved to cities from rural areas.

Almost no representative of urban forest owners has professional or educational ties to agriculture or forestry. However, 50% grew up on a farm, and one quarter have farmers among their relatives. The forest is part of an agricultural enterprise in only one fifth of cases. More than two thirds of this group are white-collar employees, civil servants or self-employed persons; 21% are retired. In general, this group is marked by an above-average level of education. On average, only 4% of the working time is spent on activities related to agriculture and forestry, for which the share of income averages only 2%. Approximately three quarters own forest areas smaller than 5 ha, and about half own less than 2 ha. About 80% have harvested timber in the last 10 years, though often only very small quantities; only 38% have also sold timber.

Urban forest owners spend less time in their forests than members of any other group and it is more often for leisure activities than for carrying out forest work. Forest work is mainly viewed as a hobby or a welcome distraction from daily routines. Members of this group do not perceive their forest as a source of income or as a possibility to build up financial reserves, nor as a source of employment. Family tradition plays only a minor role. An above-average proportion in this group appreciates their forest because it provides them with a possibility for hunting. In general, they associate feelings and images of the environment and nature rather than economic concepts with the term 'forest'.

Type 7: Forest Owners without Connection to Agriculture

This last type, which accounts for about 13% of Austrian forest owners, shows many similarities with the group of urban forest owners. However, members of this group live predominantly in small to medium-sized municipalities close to their forests. Another striking difference to type 6 owners is the degree of connectedness to the agricultural sector. Not a single member of this group grew up on a farm, and only about half have farmers among their relatives. For that reason, the group is referred to as 'forest owners without connection to agriculture.'

Almost no members of this group have professional training in agriculture or forestry and very few (6%) are either full-time or part-time farmers. Almost no working time is spent on agriculture and forestry and almost no income derived from these pursuits. More than a third of this group are white-collar employees, one fourth are civil servants and another quarter are tradespersons. There are few manual workers in this group.

A high proportion (58%) own very small properties (less than 2 ha). The proportion of owners who have inherited their forestlands (60%) is lower than in other groups, and many have purchased at least part of their forests. The proportion of those who have harvested any timber in the last 10 years (about 75%) is by far the lowest in this group, and only one third have sold timber.

When forest owners of this type go into their forests they normally do so in order to relax. For some of them, work in the forest is a burden, while for others it is a welcome distraction from daily routine. Owners of this type associate their forests with leisure experiences, nature conservation and pride of ownership.

Summarising Comparison of Forest Owner Types

In summary, the cluster analysis has revealed that Austrian forest owners are a diverse social group which can be statistically divided into at least seven distinguishable types, as summarised in Table 4. Two questions which are often asked both in forest policy science and in practical forest policy are still open: (1) how large is the share of ‘new’ forest owners; and (2) what is new about ‘new’ forest owners?

The seven types of forest owners form a kind of a sequence from owners who have a strong agricultural background to those who have no agricultural background at all. Types 1 and 2 are characterised by full-time and part-time farmers who represent the traditional image of agricultural forest owners. Types 3 and 4 also have a rather strong agricultural background, but are less actively involved in the agricultural and forestry sectors. These four groups constitute about two thirds of Austrian forest owners and could be named, in a broad sense, ‘traditional forest owners’.

The remaining third of the forest owners who form three more clusters (types 5 to 7) have almost no direct connection to agriculture and forestry; for them, working in and deriving income from agriculture and forestry is of little importance. These groups of forest owners could − from this perspective − be summarised under the term ‘new forest owners.’

Table 4. Types of forest ownership identified

Forest owner type	Characteristics
Farmer forest owners (Type 1) 20%	Very close connection to agriculture Primarily full-time farmers Professional training/education in agriculture or forestry Live in small municipalities, close to their forests Forests are mainly perceived as employment and source of income Use traditional, forestry-oriented sources of information
Part-time farmers (Type 2) 20%	Close connection to agriculture Large share of part-time farmers No professional training/education in agriculture or forestry Forest property is primarily seen as part of family traditions Get information on forests primarily from friends and relatives
Small-towners with rural background (Type 3) 12%	Mostly live in medium-sized municipalities, still close to their forests (Still) rather close connection to agriculture Attitudes between urban and farmer forest owners
Forest owners previously employed in agriculture (Type 4) 16%	(Still) rather close connection to agriculture Often professional education in agriculture or forestry Only few are still active in agriculture and forestry today Forests serve both economic and non-economic goals Often draw from traditional, forestry-oriented sources of information
Farm leavers (Type 5) 10%	Grew up on farm Today, forests are no longer part of farm enterprise High share of white-collar employees, civil servants, and tradespersons Forests serve recreation purposes rather than economic goals Sceptical towards forestry-oriented sources of information
Urban forest owners (Type 6) 9%	Live in larger cities, often far away from their forests Hardly any connection to agriculture High share of white-collar employees, civil servants, and self-employed persons High level of general education Forests are a source of income for only few Hardly ever actively seek forest-related information, and if so, primarily via television
Forest owners without connection to agriculture (Type 7) 13%	Did not grow up on farm Only few have professional training/education in agriculture or forestry Only in very few cases forests are part of a farm High share of white-collar employees, civil servants, and tradespersons Forests are almost never seen in terms of income and employment Often have purchased their forests One quarter does not harvest timber

ACCESSIBILITY OF THE VARIOUS FOREST OWNER TYPES

From the typology presented above, a number of highly relevant questions can be posed for forest policy-makers. One is the question of how forest owners can be reached and how they can be addressed. In this respect, two aspects are of considerable importance: 'How often and how intensively do forest owners use specific sources of information?', and 'What are the properties or qualities that forest owners attribute to different sources of information?' Table 5 presents the means and standard deviations of the responses to the respective survey questions for each of the seven forest owner types.

From the overall sample, about one third of the forest owners do not actively search for information on forest-related questions; another third search for information infrequently or only sporadically, and only one third take frequent measures to collect information actively. More than two thirds of the respondents have not attended any forest-related courses, seminars or excursions in recent years.

There are discernable differences in information seeking between the types of forest owners: those who are closely connected to the agricultural sector (types 1 to 4) show an above-average level of activity to find forestry information, while those who are more distant from the sector (types 5 to 7) make almost no efforts to find information. These groups also express almost no demand for forest-related expertise.

These findings suggest that forest extension and information services face two major blocks of potential clients. One group, about two thirds of forest owners, has been actively searching for information in the past and is likely to do so in the future. In the other group, which represents one third of the forest owners (but is most probably increasing), the members rarely seek forest-related information and will be difficult to access for forestry promotion and extension in the future.

Forest policy-makers as well as extension services, educational institutions and interest groups are not only interested in finding out how frequently forest owners search for information, but also which sources of information they use and what relevance they attribute to those sources. There are two broad groups of information sources which are of central importance to the forest owners surveyed: (1) institutions of the forestry sector such as the Chambers of Agriculture, forest authorities, forest owners' associations and institutions of professional education, and (2) personal contacts of forest owners, including family members, friends and other forest owners.

The seven types of forest owners ascribe remarkably different qualities especially to forestry-oriented sources of information. While forest owners with a close relation to agricultural production (types 1 to 4) highly appreciate these forestry-related sources of information, the more 'urban' types of forest owners (types 5 to 7) ascribe only minor importance to those sources. For the second category of information sources (personal contacts), ownership types do not have strong differences. Both traditional as well as 'new' forest owners search for advice and help among their peers.

Other sources of information (e.g. scientific institutions, environmental and nature protection organisations and nature protection authorities) are rarely mentioned as relevant sources of information, by any of the types of forest owners. This means that, up to now, these 'alternative' suppliers of forest-related information also have not successfully managed to address the large – and growing – segment of 'new' forest owners.

Table 5. Information behaviour of the seven forest owner types

Variable	Mean and standard deviation	Farmer forest owners	Part-time farmers	Small-towners with rural background	Forest owners prev. employed in agric.	Farm leavers	Urban forest owners without connection to agric.	Total
Active search for information[1]	Mean	2.92	3.46	3.43	3.18	3.78	4.01	3.86	3.43
	SD	1.22	1.17	1.19	1.37	1.04	1.04	1.12	1.24
Utilisation of extension services[2]	Mean	2.02	1.48	1.52	1.96	1.24	1.21	1.48	1.62
	SD	1.16	0.90	0.94	1.21	0.61	0.63	0.87	1.01
Demand for further information[3]	Mean	3.13	2.78	2.89	2.92	2.35	1.81	2.13	2.67
	SD	1.69	1.84	1.77	1.83	1.86	1.82	1.74	1.83
Importance of information sources: [4, 5]									
Family and relatives	Mean	2.39	2.29	2.73	2.80	2.29	2.62	3.10	2.55
	SD	1.23	1.24	1.43	1.38	1.37	1.44	1.41	1.35
Professional literature	Mean	2.43	2.58	2.64	2.56	3.11	2.90	2.90	2.65
	SD	1.08	1.29	1.37	1.33	1.45	1.50	1.23	1.30
Chambers of Agriculture	Mean	2.27	2.50	2.75	2.23	3.39	3.38	3.61	2.69
	SD	1.12	1.19	1.43	1.18	1.36	1.41	1.35	1.34
Other forest owners	Mean	2.57	2.62	2.97	2.43	2.88	2.92	3.05	2.71
	SD	1.13	1.20	1.20	1.11	1.24	1.36	1.19	1.20
Neighbours	Mean	2.69	2.67	3.23	2.88	2.61	2.74	3.02	2.81
	SD	1.09	1.26	1.30	1.09	1.32	1.33	1.27	1.22
TV	Mean	3.07	2.74	2.90	2.82	2.84	2.56	2.82	2.86
	SD	1.12	1.16	1.18	1.09	1.33	1.29	1.12	1.17
Forest authorities	Mean	2.77	2.93	2.86	2.49	3.16	3.51	3.18	2.90
	SD	1.31	1.29	1.33	1.24	1.26	1.47	1.30	1.32
Forest owners' associations	Mean	2.96	3.38	3.74	3.07	3.78	4.00	4.05	3.42
	SD	1.56	1.51	1.38	1.43	1.26	1.41	1.10	1.48
Technical colleges	Mean	2.99	3.87	3.43	3.26	4.07	4.23	3.80	3.54
	SD	1.39	1.37	1.45	1.44	1.11	1.16	1.36	1.42
Nature conservation authorities	Mean	3.75	3.70	3.44	3.45	3.52	4.00	3.45	3.62
	SD	1.18	1.40	1.28	1.29	1.26	1.34	1.23	1.28
Environmental NGOs	Mean	3.90	3.83	3.51	3.61	3.52	4.10	3.26	3.70
	SD	1.13	1.30	1.31	1.27	1.36	1.27	1.26	1.27
Scientific institutes	Mean	3.86	4.20	3.90	3.79	4.00	4.41	3.93	3.98
	SD	1.21	1.10	1.22	1.31	1.11	1.02	1.20	1.19

Notes:

1. 5-point scale: 1 = very often … 5 = never.
2. 1 = never; 2 = 1 day; 3 = 2-5 days; 4 = more than 5 days in the last 3 years.
3. 6-point scale: 1 = no demand; 6 = very high demand.
4. 5-point scale: 1 = very important … 5 = not at all important.
5. Sources of information are ranked by decreasing overall importance

CONCLUDING REMARKS

This paper has been premised on the notion that considerable structural change as observed in agriculture and forestry over the last three to four decades has led to steadily decreasing interdependences between forest ownership and agricultural enterprises. As a consequence, it makes sense to ask whether forest policy-making which has been primarily geared towards traditional agricultural forest owners is still adequately informed about the motives and the behaviour of its clientele.

This study showed that a considerable number of forest owners do not fit into the traditional picture of farmer forest owners. These 'new' forest owners – as they are often called – differ from their traditional colleagues in their forest-related attitudes and behaviour.

The typology elaborated above gives differentiated answers to the question of what is new about 'new' forest owners. A number of factors play a role in characterising 'new' forest owners. Altogether, they are a somewhat diverse group and can hardly be characterised by just one illustrative name, be it 'non-resident', 'urban' or 'non-farm' forest owners. This study found new forest owners who live in cities far away from their forests, but it also found those who live in rural areas close to their forests but who have either given up their farms or who have never had any connections to agriculture.

Beyond the high degree of diversity within the group of 'new' forest owners, even the term 'new' is questionable. Even before the recent structural changes in agriculture, one would have found forest owners living far away from their forests or in larger cities or holding a profession outside the agriculture or forestry sectors. Structural change in agriculture as substantiated in the official statistics and the results of this study, however, suggest that the share of these types of forest owners has substantially increased.

The implications for forest policy and extension services are profound. A growing share of forest owners associate 'non-traditional' goals with their properties: different services of the forest – such as recreation and nature conservation – might be pursued instead of timber production. In addition, the effectiveness of traditional informational instruments, which have been designed to primarily address 'traditional' forest owners, is called into question with regard to new owners. Forest authorities and extension services, among others, may need to consider alternative ways to reach the diverse groups within their clientele.

ACKNOWLEDGMENTS

The forest owner survey was carried out with the financial support of the (former) Austrian Federal Ministry of the Environment (now Ministry of Agriculture, Forestry, Environment and Water Management). The Federal Office of Metrology and Surveying provided kind assistance in the statistical sampling. Ms. Sabine Ruschko coordinated the telephone survey and performed some basic statistical analyses.

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